

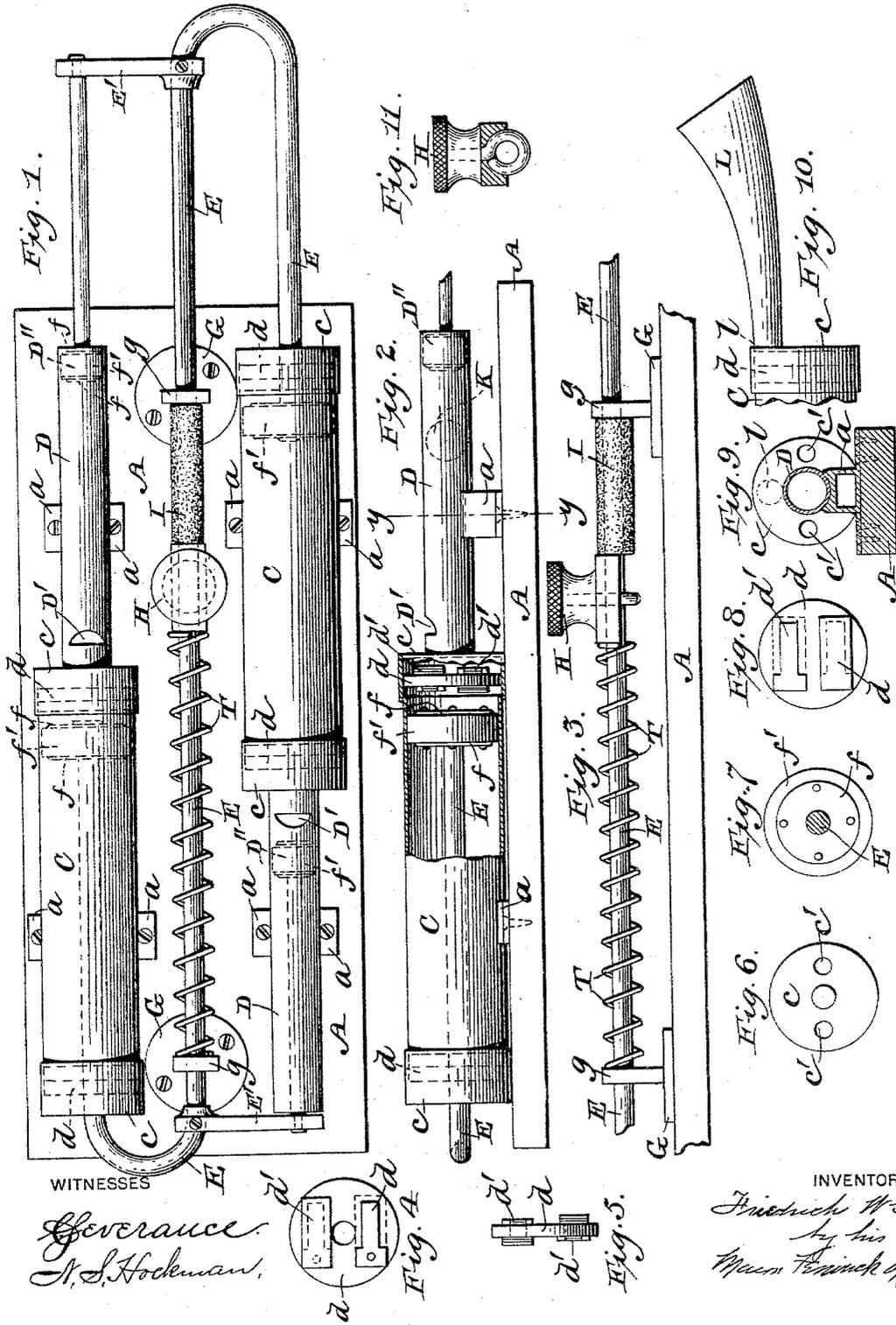
(No Model.)

2 Sheets—Sheet 1.

F. W. G. BOETTCHER. SOUNDING DEVICE.

No. 571,639.

Patented Nov. 17, 1896.



WITNESSES

Geverance
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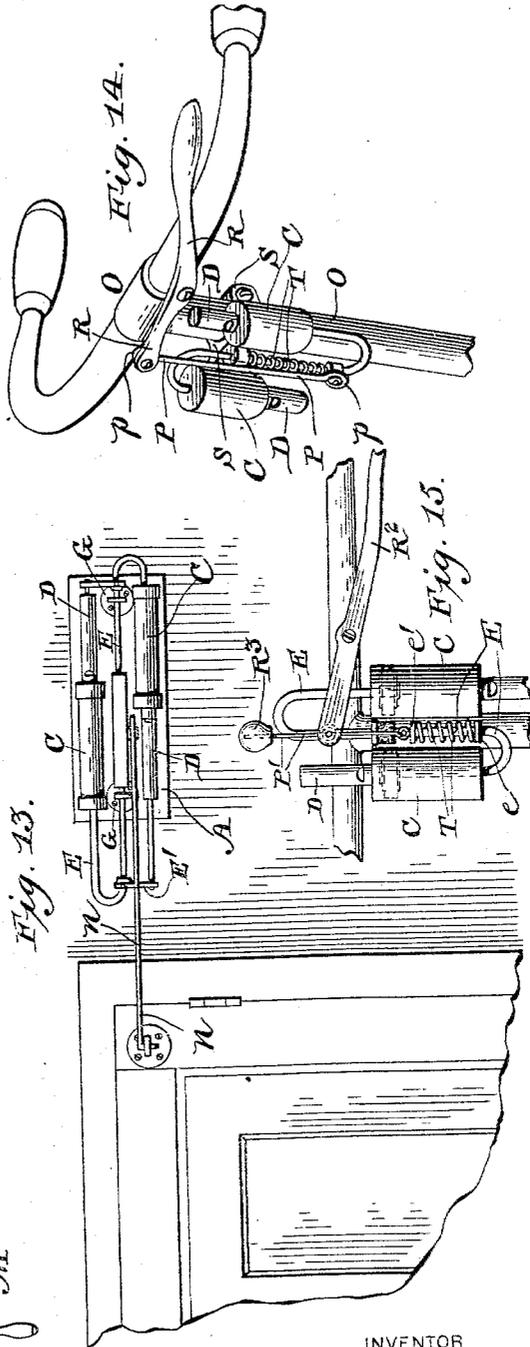
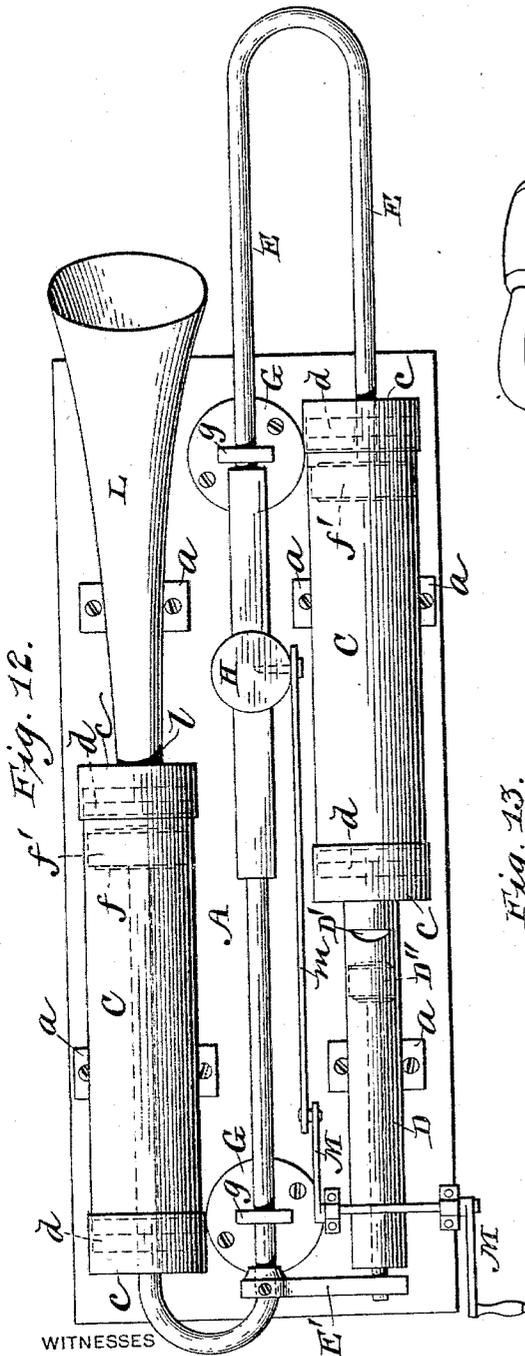
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WITNESSES
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UNITED STATES PATENT OFFICE.

FRIEDRICH W. G. BOETTCHER, OF DULUTH, MINNESOTA.

SOUNDING DEVICE.

SPECIFICATION forming part of Letters Patent No. 571,639, dated November 17, 1896.

Application filed February 15, 1896. Serial No. 579,338. (No model.)

To all whom it may concern:

Be it known that I, FRIEDRICH W. G. BOETTCHER, a citizen of the United States, residing at Duluth, in the county of St. Louis and State of Minnesota, have invented certain new and useful Improvements in Sounding Devices; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to improvements in alarms and musical sounding devices for any purpose, and has special relation to a plurality of whistles or a combined whistle and reed for producing a harmony of sounds or a chord, and the objects of my invention are, first, to produce an alarm or whistle which can be used for a bicycle and doors, or as a toy, and, second, to operate a whistle and reed simultaneously by one and the same movement; also to cause the rapid movement of air necessary to sound the whistle and the reed by means of pistons mounted on common piston-rods and working in the respective cylinders of the whistle and reeds; also to cause the tone of the whistle to vary from a deep bass to a high shrill note as the piston is reciprocated.

I accomplish these objects by the peculiar construction and combination of devices as described in the following specification and shown in the accompanying drawings, in which—

Figure 1 represents a top plan view of the devices embodying my invention, the same being used in duplicate. Fig. 2 represents a side elevation of the same, partly broken away to show the piston within. Fig. 3 represents a side elevation of the common piston and the handle for operating the same. Fig. 4 represents a side elevation of the reed-disk at the front end of the reed-cylinder. Fig. 5 represents a side elevation of the same. Fig. 6 represents a side elevation of the cylinder-head through which the piston-rod passes. Fig. 7 represents a side elevation of the piston. Fig. 8 represents a side elevation of the reed-disk at the rear end of the reed-cylinder. Fig. 9 represents a transverse vertical section on the line *y y* of Fig. 2. Fig. 10 represents a side elevation, partly broken away, of the

rear end of the reed-cylinder with a sounding-horn attached. Fig. 11 represents a side elevation of the piston-rod operating-handle. Fig. 12 represents a top plan view of a modified form of my sounding device in which a reed-horn is applied in the place of one of the whistles and the piston-rod is reciprocated by means of a crank and pitman. Fig. 13 represents my invention as applied to a door so as to sound upon the opening or closing of the same. Fig. 14 represents a perspective view of a portion of a bicycle-head with my invention applied to the same, and Fig. 15 represents a detail front elevation of my whistle applied to the handle-bar of a bicycle and provided with a modified form of operating-lever and an actuating-knob.

A in the drawings represents the base of the device, upon which a reed and whistle cylinders C D, respectively, are mounted by means of supports *a a*, secured thereon by screws and conforming upon their upper sides to the under sides of the cylinders. The reed-cylinder C is provided at each end with a reed-disk *d*, in which is mounted two reeds *d'* *d'*, one of which disks is vibrated by the passage of the air in either direction. The cylinder C is also provided at each end with a head *c*, having air-vents *c'*. The reed-disk and cylinder-head at the front end of the cylinder are both perforated to allow the passage therethrough of the piston-rod E.

The whistle D abuts at one end against the end of the cylinder C, but at its opposite end is open to allow the passage of air in and out of it. The whistle is provided with a sounding-opening D' and with a piston D'', constructed, as shown in Fig. 7, of two thin disks *f f*, having a relatively larger leather disk *f'* secured between them. This form of piston is used in both the whistle and the reed-horn. The piston-rod E is loosely mounted in apertured lugs *g g*, secured by means of disks G to the base. A rubber cushion or buffer I in form of a tube or sleeve is applied on the piston-rod E to prevent shocks and noise on the return stroke of the piston as it comes in contact with one of the lugs *g*. A coil-spring T surrounds the piston-rod E and is applied on the same between the operating-handle H and one of the lugs *g*. The object of this spring is to assist in returning the piston-rod after

it has been moved forward and eases the movement. The piston-rod of the whistle is connected to the piston-rod of the reed-horn by a movable arm E', adjustably mounted by means of set-screws on the latter, and thus the two piston-rods act as one when operated by the handle H.

If it is desired to give the whistle a warbling sound, a ball K is inserted in its cylinder.

It is sometimes desirable to use a sounding-horn L in connection with the reed-cylinder, in which case an aperture *l* is formed in the rear end of the cylinder-head above the end of the whistle-cylinder, and the smaller end of the horn inserted therein, as shown in Fig. 10.

As represented in Fig. 1, my devices are used in duplicate, thus giving a greater volume of sound, the piston-rod in this case being given a double turn, so as to connect with both the pistons of the reed-cylinders, and provided with two arms E', connected, respectively, to the two piston-rods of the whistles.

When it is desired to operate the device, the piston-rod E is moved backward and forward by means of the handle H, thus causing the air in the cylinder to be forced out at one end and drawn in at the other, one reed in each end sounding upon each movement to produce a chord and at the same time the pistons in the whistles are advancing or withdrawing and giving the rising or falling tones due to the movement of said pistons and the consequential decrease or increase of the cubic air-space in the said whistles.

A beautiful harmony of sounds can thus be produced, and the chord by sliding the pistons in one direction may also be different from that produced on the reverse movement.

I sometimes employ a crank M and pitman *m*, connecting it to the piston-rod, as shown in Fig. 12, so that the said piston-rod may be rapidly reciprocated by the rotation of the said crank. I also show in Fig. 12 a modified construction in which I omit one of the whistles D and insert the reed-horn L in its place.

When I employ my invention in connection with a door as an alarm, as shown in Fig. 13, I attach the device to the wall in proximity to the hinges of the door and connect the piston-rod E to said door by a pivoted lever *n*, so that the said piston-rod will be reciprocated either one way or the other as the door is opened or closed, one of the whistles sounding a high shrill note and the other an altogether different note, a base one, for instance, one sounding as the door is opened and the other as the door is closed, so that a person familiar with the device can tell whether the door is being opened or closed according to the tone of the whistle.

In Fig. 14 I show the invention applied to the head of a bicycle. In this construction O represents the head of the bicycle to which is secured the sounding device. The cylinders are made, preferably, somewhat shorter than the cylinders shown in the other views

of the drawings, so that the device can be more conveniently applied on the bicycle and will not be in the way of the rider, and the alarm can be sounded with a short quick stroke, which is desirable for bicycles. In this application of my invention the reeds in the ends of the cylinders are omitted and a suitable whistle inserted in one end of each cylinder, whereby when the pistons in said cylinders are operated the air is forced through said whistles to sound them.

A rod or wire P is formed at its ends with eyes *p*, the lower end of the rod being attached to the piston-rod E and its upper end being attached to a hand-lever R, which latter is pivoted on the bicycle-handle, as shown. By this construction when it is desired to sound an alarm it is simply necessary to bear down on the lever R, which will cause the whistle to make two sounds, and by releasing the hand the spring T will return the piston-rod and cause the whistle to make two more sounds. When the alarm is applied to a bicycle, I prefer to dispense with the base A and substitute therefor an open attaching spring-clip S, having outwardly-extending apertured ends. The clip is applied around the head and the ends of the clip drawn together by a bolt and thumb-nut.

In the construction shown in Fig. 15 I employ both a lever R² and a knob R³, by which to operate the rod P'. The spring T in this case is mounted about the rod E and its lower end rests against a rigid lug *e*, through which the said rod E passes. The said rod P' is connected at its lower end to the rod E just above a washer *e'*, that surrounds the rod E and rests against the top of the spring T. The upper end of the rod P' is extended and provided with a knob R³, that is intended to be struck by the hand to operate the whistle. Said whistle can also be operated by the lever R². This lever is so pivoted to the handle-bar that its outer free end extends below the outer end of the handle-bar, so that in operating said outer end the lever is pulled up instead of being depressed. The rod P' in this application of the invention is forced down against the action of the spring instead of being pulled up, as in the construction shown in Fig. 14.

Having now described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In an alarm, the combination of two cylinders, each cylinder provided with an independent sounding device, pistons for said cylinders, a single piston-rod connecting said pistons, whereby they can be operated simultaneously and sound the alarms, substantially as described.

2. In an alarm, the combination of two cylinders, an independent sounding device for each cylinder; said sounding devices being of different tones, a piston in each cylinder, and a piston-rod for connecting said pistons, whereby one of said sounding devices is

sounded upon the movement of one piston and the other upon the opposite movement of the other piston, substantially as described.

3. A bicycle-alarm comprising two cylinders, independent sounding devices in each cylinder, pistons for said cylinders, a piston-rod connecting said pistons whereby the sounding devices are operated simultaneously, and a lever connected to the piston-rod and adapted to be pivoted on the right or left hand side of the handle-bar of a bicycle, substantially as described.

4. In an alarm, the combination of two cylinders, each cylinder provided with a sounding device, pistons for said cylinders and connected together, and a spring for returning the pistons, whereby the pistons can be operated simultaneously and sound two alarms, substantially as described.

5. In a sounding device, the combination of a reed-cylinder and a whistle-cylinder suitably connected together, pistons for said cylinders and means for connecting said pistons together whereby they can be operated simultaneously, substantially as described.

6. In a sounding device, the combination with a base portion, of a reed-cylinder and a

whistle-cylinder mounted thereon, a single piston in each cylinder and a piston-rod connecting said pistons whereby they can be operated simultaneously, substantially as described.

7. In a sounding device, the combination with a base portion, of a whistle-cylinder, a reed-cylinder, disks provided with reeds and mounted in each end of the said reed-cylinder, pistons for both of said cylinders and a piston-rod connecting said pistons whereby they can be operated simultaneously, substantially as described.

8. In a musical sounding device, the combination with a suitable base portion of two reed-cylinders, two whistle-cylinder pistons for all of said cylinders, a piston-rod connecting all of said pistons whereby they can be operated simultaneously, substantially as described.

In testimony whereof I hereunto affix my signature in presence of two witnesses.

FRIEDRICH W. G. BOETTCHER.

Witnesses:

E. T. FENWICK,
LUTHER L. APPLE.